

SHORT NOTES

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OBSERVATIONS ON PERCH USE IN
TWO LIZARDS (*ANOLIS SCRIPTUS*
AND *LEIOCEPHALUS*
PSAMMODROMUS)

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Schoener (1975) and Schoener & Adler (1991) briefly noted the relationships of *Leiocephalus* spp. and *Anolis* spp. in the Bahamas; however these studies did not provide a detailed, quantitative assessment of the microhabitat use of these species, but they do suggest there are differences in how these species use their environment. Here I examine perch use patterns of two sympatric lizards (*Anolis scriptus* and *Leiocephalus psammodromus*) on Pine Cay in the Turks and Caicos Islands, British West Indies.

Anolis scriptus is distributed throughout the Turks and Caicos Islands, as well as the Bahamas (Schwartz & Henderson, 1991). Very little has been published on this lizard except for a description of perch use on Inagua in the Bahamas (Laska, 1970). *Leiocephalus psammodromus* is distributed throughout the Turks and Caicos Islands (Schwartz & Henderson, 1991). It is sexually dimorphic (Smith, 1992), and is reproductive from April to November (Smith & Iverson, 1993).

Pine Cay is a small (350 ha), relatively low (highest point < 3 m above mean sea level) island found in the Caicos Islands at the southeastern end of the Bahamian archipelago. The island is primarily covered with "dense scrub" and "mixed woodlands", however, "open scrub" and "beach" habitats are prevalent on the leeward coast (see Iverson, 1979 for a more detailed description of the island).

I made observations on Pine Cay between 13 July and 28 July 1991. Observations were made from 0700 to 1800 EDT. However, lizards were not individually marked to reduce the influence of the human observer on their behavior (see Marcellini & Janssen, 1991). Therefore, I only use one day's data (22 July) to ensure that all observations are independent of each other. Because I did not sample an area more than once a day, each observation represents a different individual. I walked slowly along the edge of a path or road, or along the beach, looking for lizards. Upon observing a lizard, I recorded the species, time, and several characteristics of the perch. Substrate characteristics recorded were: (1) rock, (2) litter, (3) bare ground or sand, (4) on tree, (5) on wall, and (6) other. In addition, I noted whether the lizard was using an open or covered perch, and whether the lizard was in full sun, in a sun-shade mosaic, or in full shade. In some cases, one or more perch characteristic was not recorded.

Anolis scriptus was most often seen on trees (61.3%; 65/106), followed by rocks (24.5%; 26/106). Anoles were rarely observed on walls (5.7%; 6/106), bare/sand (4.7%; 5/106), and litter (1.9%; 2/106). *Leiocephalus psammodromus* was most often found on litter (38.6%; 27/70), followed by trees (22.8%; 16/70), bare/sand (18.5%; 13/70), and rocks (11.4%; 8/70). It was never found on walls. Niche breadths for substrate use (Simpson's $B = 1/\sum p_{ij}^2$; Levins, 1968) were 2.26 and 3.91 for *A. scriptus* and *L. psammodromus*, respectively. Niche overlap using Schoener's (1970) proportional overlap ($PO = 1 - 0.5 (\sum |p_{ij} - q_{ij}|)$) was 0.428. *Anolis scriptus* were first observed in full sun 36.2% (29/80) of the time, 13.8% (11/80) of the time in sun/shade mosaic, and 50% (40/80) of the time in full shade. *Leiocephalus psammodromus* was located in full sun 18.5% (12/65) of the time, 38.5% (25/65) of the time in sun/shade mosaic, and 43.0% (28/65) of the time in full shade. *Anolis scriptus* was first observed in the open 49.5% (49/99) of the time, whereas *L. psammodromus* was first observed in the open 19.4% (13/67) of the time.

Anolis scriptus is definitely more arboreal than *L. psammodromus*. However, on Pine Cay the former may be less arboreal than on other islands. Laska (1970) found that on the island of Inagua, *A. scriptus* used trees 86.3% of the time (145 of 168 observations), which is substantially higher than the value reported here ($G = 22.24$, $P < 0.001$).

The two lizards examined in this study did not exhibit a high degree of overlap in microhabitat use. *Anolis scriptus* also showed shifts in perch use during the day such that their use of terrestrial habitats decreased when *L. psammodromus* began to be active and using terrestrial habitats (Smith, 1994). Why *A. scriptus* and *L. psammodromus* show the patterns of habitat and microhabitat use observed in this study is unknown. There are at least two possible explanations. The first is that there is or has been competition between *A. scriptus* and *L. psammodromus*. The different habitat and microhabitat use of these two species may represent resource partitioning (see Schoener, 1977). Schoener (1975) found that habitat shifts by *Leiocephalus* sp. appeared to have taken place in 44% of cases involving sympatry between *Anolis* sp. and *Leiocephalus* sp., suggesting that there is at least the potential that competition has played a role in structuring the microhabitat relations in these two lizards. On Inagua, *A. scriptus* is the only anole (Laska, 1970) as it is on Pine Cay. As on Pine Cay, *A. scriptus* on Inagua is sympatric with only one curly-tail (*Leiocephalus inaguae*; Schwartz & Henderson, 1991). Whether or not the differences in tree use (mentioned above) reflect differences in the habitat use of the two species of *Leiocephalus* is uncertain, but is certainly a possibility as the limited information available on *Leiocephalus inaguae* (see Schwartz & Henderson, 1991) and the data presented here suggest differences in habitat use. A second possible explanation is that each species has a

set of specific physiological, nutritional, or social requirements, and their microhabitat and habitat use patterns are simply reflections of these requirements (see Barbault, 1991). For example, use of different microhabitats during the day may result from thermoregulation (e.g., Davis & Verbeek, 1972; Carrascal & Diaz, 1989; Marcellini & Jenssen, 1989; Castilla & Bauwens, 1991).

While the present study cannot provide direct answers to whether or not competition is occurring or whether abiotic factors are influencing the interaction (or lack thereof), it does suggest that an investigation into the mechanism(s) driving perch use and selection in these two species would be valuable in understanding their ecology.

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